

Development and Analysis of Chickpea and Oats Crackers

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ABSTRACT

Bakery industry is the major food processing industry in India and stands second position in the manufacture of biscuits. Bakery products are the most popular food products consumed by all age groups. The demand for bakery products is increasing in day today life because of easy availability and ready to eat convenient products having better shelf-life. Crackers are crisp baked products, chemically leavened or fermented. These are light in weight with longer shelf life. Crackers was produced from the mixture of chickpea and rolled oats and Spices (Garlic paste, lemon juice, salt, oil, turmeric powder, chilli powder, oil and black pepper powder.) at different combination. Proximate Analysis and sensory analysis were carried out on the crackers for their quality evaluation. The proximate analysis were determined using standard methods. From the result of proximate analysis, the moisture content is 1.37 %. Also the other components of ash, fat, protein, carbohydrate and dietary fiber is 3.78%, 8.75g, 20.88g, 65.22g and 11.8 respectively. Sensory evaluation was done to know the acceptability of chickpea and rolled oats crackers. Sensory evaluation was done to know the acceptability of chickpea and oats crackers. It include colour, taste, flavour, texture, appearance and overall acceptability. The sample scored for overall acceptability i.e.8.7. The taste is rated highest scored i.e. 8.6. Also the other components of color, flavour, texture, appearance and overall acceptability is 8.3, 7.5, 7.9, 7.6 and 8.7 respectively. Result from proximate analysis and sensory analysis was shown that product is acceptable.

KEYWORDS: Chickpea, Rolled oats, proximate analysis and sensory evaluation

1. INTRODUCTION:

Chickpea is a cheap and important source of protein for those people who cannot afford animal protein or who are largely vegetarian. Furthermore, chickpea is also a good source of minerals (calcium, phosphorus, magnesium, zinc and iron), unsaturated fatty acids, fibre and β -carotene). Chickpea also plays an important role in maintaining soil fertility by fixing nitrogen at rates of up to 140 kg/ha/year (1). Oat is also high in dietary fibre, including soluble fibre and β -glycan, which has been shown to reduce serum cholesterol (2)(3). Because of the growing consumer demand for healthy, natural and convenient foods, attempts are being made to improve snack foods nutritional values by modifying their nutritive composition (4). Garlic (*Allium sativum*) is a species of bulbous flowering plant in the genus *Allium*. Its

close relatives include the onion, shallot, leek, chive, (5) Welsh onion and Chinese onion.(6). Lemons are an excellent source of vitamin C and flavonoids, which are antioxidants. The lemon is a bright yellow citrus fruit. Turmeric powder has a warm, bitter, black pepper-like flavor and earthy, mustard-like aroma. (7)(8). Chili powder (also spelled chile, chilli, or, alternatively, powdered chili) is the dried, pulverized fruit of one or more varieties of chili pepper, sometimes with the addition of other spices (in which case it is also sometimes known as chili powder blend or chili seasoning mix). (9). Black pepper (*Piper nigrum*) is a flowering vine in the family Piperaceae, cultivated for its fruit (the peppercorn), which is usually dried and used as a spice and seasoning.

How to cite this paper: Dharti Patel | Renuka Singh | Niral Patel
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Published in
International Journal of Trend in Scientific Research and Development (ijtsrd), ISSN: 2456-6470, Volume-7 | Issue-2, April 2023, pp.454-457, URL: www.ijtsrd.com/papers/ijtsrd55041.pdf



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TYPE OF CRACKER:-

Crackers come in many shapes and sizes, such as round, rectangular, triangular, or irregular.

1. Fermented – For example: soda crackers, saltines and cream crackers.
2. Chemically leavened – For example: snack cracker.

In India, bakery industry is considered as one of the major food processing industry. India stands second in manufacturing of biscuits, first being USA. Bakery products are consumed by all age groups. They are gaining popularity as processed foods because of their convenience, ready to eat and good shelf life. Crackers are a category of crisp baked products, chemically leavened or fermented. Soda crackers, or saltines are a traditional type of fermented cracker, produced from laminated dough. Snack crackers are prepared by laminating dough with added flavouring and less fermentation time. The term cracker can be used when the baked product has a cereal base where the proportion should be at least 60% and a low moisture content of 1–5% which is the distinguishing factor. Crackers usually have a higher fat content than other baked products and a longer shelf life. Crackers are used as a base for savoury toppings most commonly cheese and tomato but they may also have enough flavour from tasty coatings to be eaten alone. (10 to 13)

2. MATERIALS AND METHODS**RAW MATERIALS:-**

Chickpea, rolled oats, Garlic paste, lemon juice, salt, oil, turmeric powder, chilli powder and oil black pepper powder.

TOOL AND EQUIPMENT:-

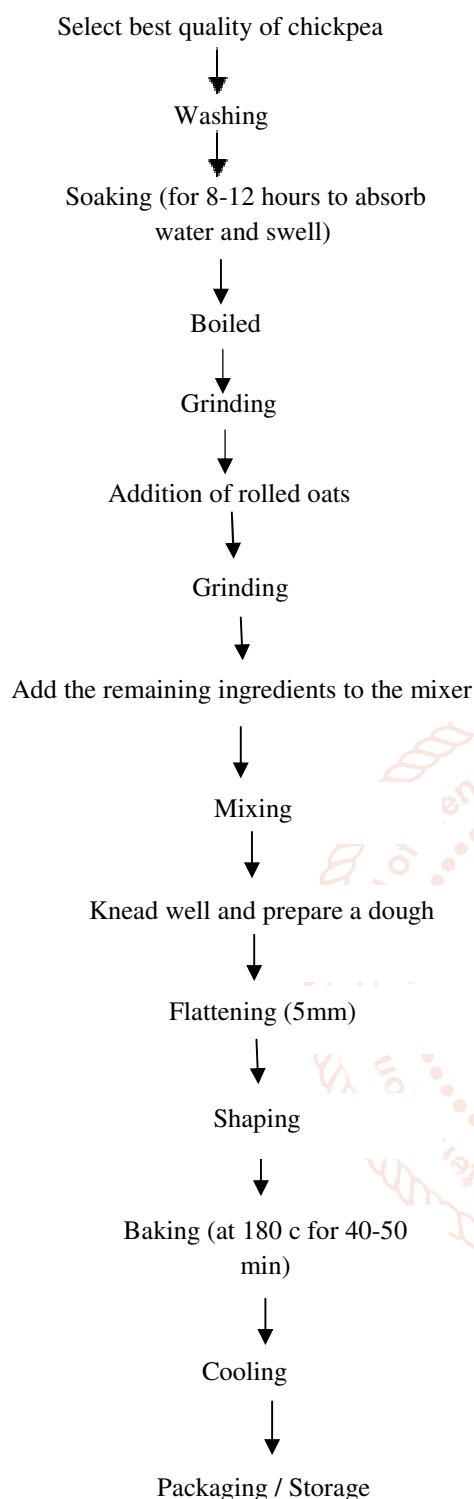
Plastic hand gloves, baking trays, fork, rolling pin, electric blender, microwave oven, Mixing bowls, Rubber scraper, Electric mixer, baking sheet(paper), parchment paper and airtight container.

PROCEDURE:-

Select best quality of chickpea and oats to get the best quality of crackers. Chickpea approximately 250 grams. Soaked the chickpea for 8-12 hours then boiled the chickpea. Oats approximately 100 grams. Rinse and drain the chickpeas. Place the chickpeas in a food processor, blend until they are smooth. Add the rolled oats, continue to blend until the oats are finely chopped into the chickpeas. Add garlic, lemon juice and salt for seasoning. Begin blending in the food processor, gradually add the oil, and continue blitzing/blending until everything comes together as a ball. Line a baking tray with baking paper, place the dough on top, press the dough with your hands to start flattening it. Place the second piece of baking paper on top of the dough, using a rolling pin, roll

until it is evenly spread over the baking tray and approximately 5mm thick. Using a cookie cutter cut the crackers in your desired shape. Prick the center of each cracker with a fork, it helps the crackers to bake evenly. Bake in a pre-heated oven at 180 degrees Celsius for 40-50mins until golden. Leave to cool. The baked crackers are cooled to room temperature and packed in metallized polyethylene pouches.

**Figure 1****Figure 2****Figure 3**

Process flow chart:**3. RESULTS AND DISCUSSION****Sensory Evaluation**

Sensory evaluation consists of different attribute considered were appearance, color, flavor, texture, taste and overall acceptability. Average values of each attribute for respective sample is given in Table 1. From the result sample was selected which contains Chickpea, rolled oats, Garlic paste, lemon juice, salt, oil, turmeric powder, chilli powder, oil and black pepper powder in the proportion of (250g, 100g, 3tbsp, 2tbsp, 1tsp, 1tsp, 2tsp, 4tbsp, 1tsp) respectively it ranked highest with a mean value of 8.7. Based on colour sample ranked second highest

with a mean value of 8.3. Flavour is determining factor in consumer acceptance of crackers it can deduct that the crackers is accepted by the sample the mean value was 7.5. The taste result shows that the sample had the highest mean score of 8.6. On the basis of texture sample was accepted the mean score of 7.9. For the appearance the mean score is for sample i.e. 7.6.

Sr. no.	Sensory Characteristics	Mean	Description
1	Taste	8.6	Like extremely
2	Texture	7.9	Like very much
3	Color	8.3	Like moderately
4	Flavour	7.5	Like slightly
5	Appearance	7.6	Like moderately
6	Overall acceptability	8.7	Like extremely

Table 1:- Sensory Evaluation of Chickpea and Rolled Oats Crackers

Proximate Analysis

Sr. no	Nutrition facts	Results
1	Moisture	1.37%
2	Total Ash	3.78%
3	Fat	8.75 g
4	Protein	20.88 g
5	Carbohydrate	65.22 g
6	Dietary Fiber	11.8 g
7	Total sugars	1g
8	Includes Added Sugars	0g

Table 2:- Nutritional Composition of Chickpea and Rolled Oats Snack Crackers

The nutritional composition of chickpea and rolled oats crackers are listed in table 2. In contrast to the regular crackers (with RWF (refined wheat flour)) the product is developed by decreasing the quantity of RWF and replacing it with chickpea and oats, consisting of high nutritional value compared to other plain crackers. Crackers are dried product, it expected to low moisture content the sample content 1.37% moisture and it is low as compared to other plain crackers. From the result, ash content 3.78%. The fat content in chickpea and rolled oats crackers is 8.75g. High fat cause rancidity in food leading to development of unpleasant and odorous compound. From the result sample content higher protein than the other crackers i.e. 20.88g. The sample content 65.22g of carbohydrate. The sample content 11.8g dietary fiber as compared to other plain crackers. The total sugar content of the sample is 1g. There is no any added sugars in this crackers. Suitable packaging which controls moisture absorption adds to increase in shelf life.

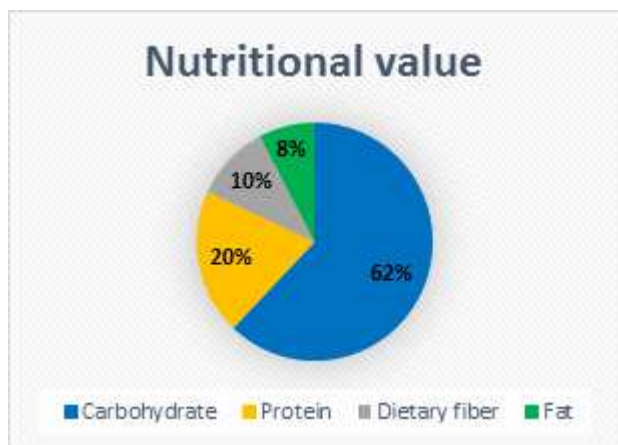


Fig 4:- Nutritional value pie chart 1

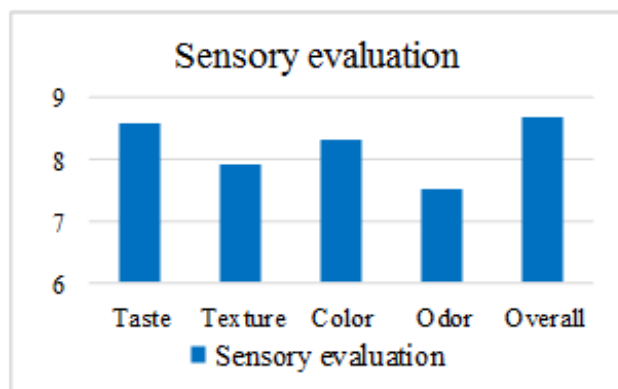


Fig 5:- Sensory evaluation column chart

4. CONCLUSION

The aim of study is "Development and analysis of chickpea and rolled oats crackers", Crackers was produced from the mixture of 250g chickpea and 100g rolled oats and Spices (3tbsp Garlic paste, 2tbsp lemon juice, 1tsp salt, 4tbsp oil, 1tsp turmeric powder, 1tsp chilli powder and 1tsp black pepper powder.), was found to be acceptable among the consumers, and Proximate (nutrient) analysis indicates that the product developed has a good protein and dietary fiber content when compared to other popular snack crackers on the market, as the nutrient density is more compared to other cracker varieties available in the market and can be widely adopted by customers, as chickpea and rolled oats is one of the most commonly used to prepare various food items. Sensory evaluation of crackers samples was carried out for attributes such as taste, texture, color, flavour and overall acceptability by 9 members based on a 9-point hedonic scale. The results of sensory evaluation shows that the crackers Sample is most acceptable. Cracker sample got 8.7 overall acceptability that indicates the cracker is like extremely. Cracker contains 1.37% Moisture, 3.78% Ash, 65.22g Carbohydrate, 11.8g Dietary fiber, 8.75g Fat and 20.88g Protein. The shelf life of cracker is about one month without addition of any chemical preservative and can be a great choice for people

preferring low or no preservative snacks. Thus it was beneficial for health.

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